Claims

1. A method of removing particulate solids from an oil based drilling or completion fluid, comprising:

exposing the fluid to an electric field to electrically migrate particulate solids suspended therein, and

collecting the migrated particulate solids to remove them from the fluid.

2. A method according to claim 1, wherein the fluid comprises a water-in-oil emulsion, and the strength of the electric field is lower than that required to coalesce the water droplets of the emulsion.

3. A method according to claim 1 or 2, wherein the strength of the electric field is less than 100,000 V/m.

4. A method according to any one of the previous claims, wherein the strength of the electric field is controlled such that current and voltage remain proportional to each other.

5. A method according to any one of the previous claims, wherein the PV and/or YP of the fluid are reduced as a result of the collection of the particulate solids.

6. A method according to any one of the previous claims, wherein the fluid contains clay particles.

7. A method according to any one of the previous claims, wherein the fluid contains weighting agent particles.

8. A method according to any one of the previous claims, wherein the particulate solids in the fluid occupy at least 5 vol. % of the total fluid.

9. A method according to any one of the previous claims, wherein the fluid is a shear-thinning fluid which forms a gel when quiescent.

10. A method according to any one of the previous claims, further comprising heating the fluid to enhance the collection of particulate solids.

11. A method of recycling an oil based drilling or completion fluid by performing the method of any one of the previous claims.

12. A method according to claim 11, including the step of using a centrifuge or hydrocyclone to remove other particulate solids from the fluid.

13. A method according to claim 1, including the step of using at least two electrodes to generate the electric field.

14. A method according to claim 1, including the step of using at least two electrodes to generate the electric field and a deposit removal system co-located with the electrodes.

15. A method according to claim 14, wherein deposit removal system is operated continuously or as a batch process.

16. An apparatus for removing particulate solids from an oil based drilling or completion fluid, comprising:

electrodes adapted to expose the fluid to an electric field to electrically migrate particulate solids suspended therein, and

a deposit removal system for collecting the migrated particulate solids to remove them from the fluid.